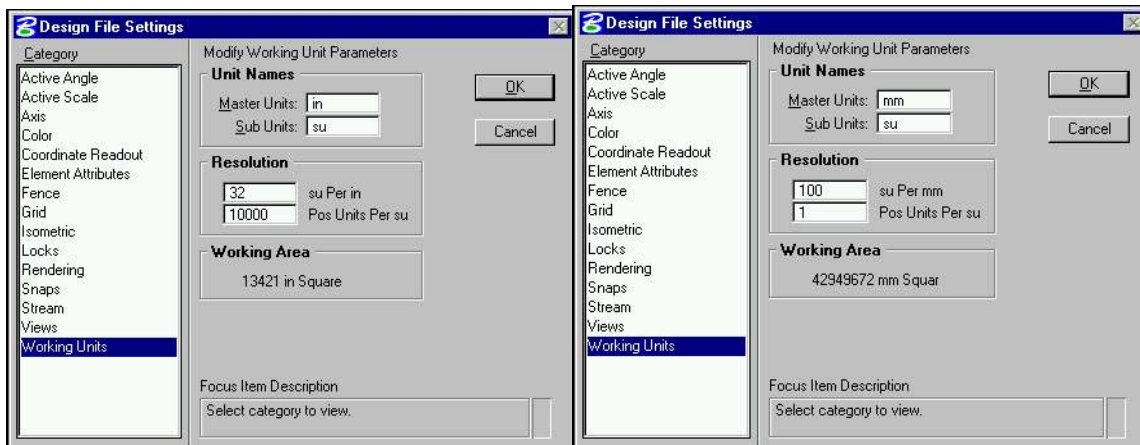


MICROSTATION DETAILING & SETTING CONVENTIONS

GENERAL

This document is being provided to give consultants direction regarding the methods of detailing and MicroStation settings used in the Bridge Office. The methods here were developed with the ease of archiving being the most apparent benefit. For this reason, TS & L and design plans are all included in the same design file which is simply named the structure number. If the file size becomes too large and begins to affect computer performance, we simply create a new file. Its file name is also the structure number, but with an a, b, c, etc. at the end.

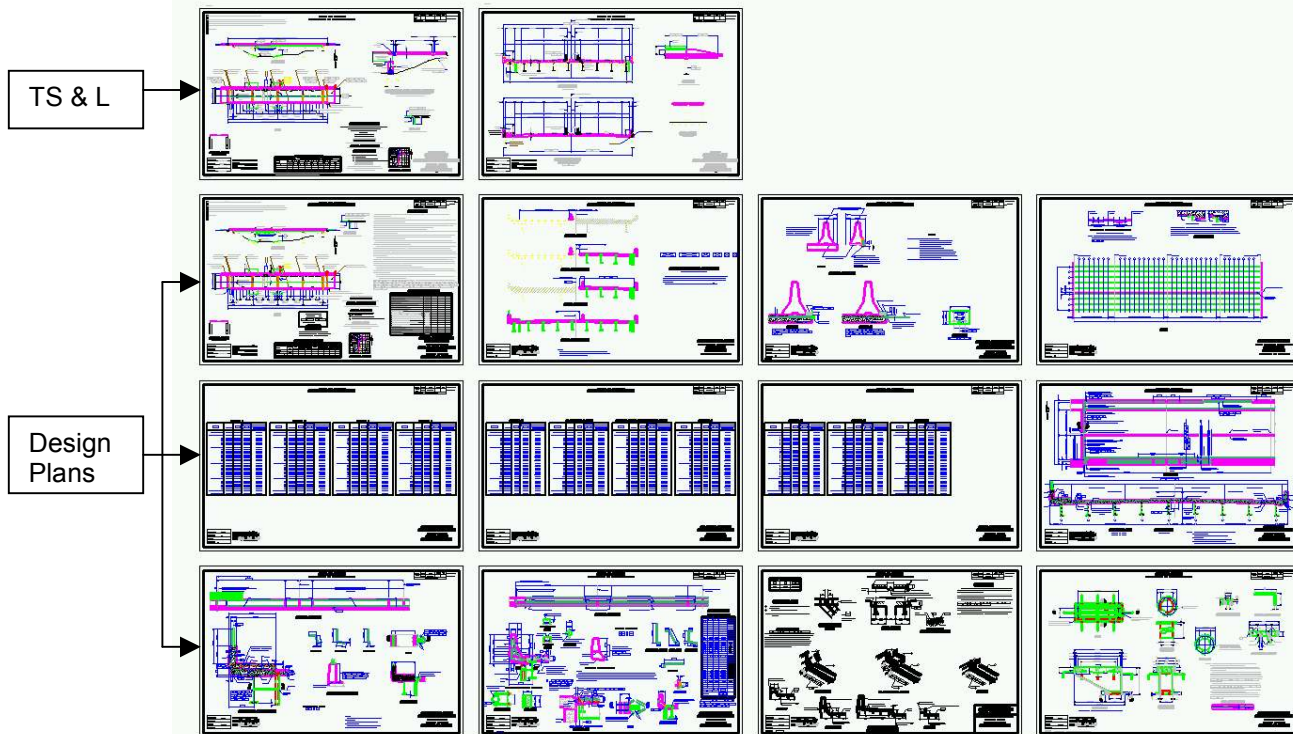
Design files are set up using seed files which are available on the I.D.O.T. website. Currently they are ebridge.dgn and mbridge.dgn. The first is for English jobs and the latter is for metric jobs. They are design files with a partial grid of borders having the settings adjusted to the Department's preferences. The working units are set as follows:



The working units were set up as shown because of the previous limitations of MicroStation with the finite design plane. Precision could be increased by raising the number of positional units per sub-unit, however the design plane would reduce in size. Current versions of MicroStation have the Enhanced Precision configuration variable which addresses the accuracy concern, but not the design plane size. MicroStation v8 addresses both concerns by incorporating a much larger design plane.

As previously stated, our new seed files already have partial grids of borders. If additional sheets are required, just continue the pattern of borders. If a set of design plans must be split into two or more files, the pattern should be continued, but not repeated for each file. In other words, if all of the design files were referenced into a single design file, there would be one long, vertical chain, four borders in width.

The top row of borders is reserved for the TS & L sheet(s). Below that is reserved for the actual design plans. The next page shows what the general layout should look like.



English File Setup

sheet	Coordinate	
	x	y
TS & L	5000	5024
TS & L (if req'd.)	5036	5024
TS & L (if req'd.)	5072	5024
TS & L (if req'd.)	5108	5024
GP&E	5000	5000
design sheet 2	5036	5000
design sheet 3	5072	5000
design sheet 4	5108	5000
design sheet 5	5000	4976
design sheet 6	5036	4976
design sheet 7	5072	4976
design sheet 8	5108	4976
design sheet 9	5000	4952
design sheet 10	5036	4952
design sheet 11	5072	4952
design sheet 12	5108	4952

Metric File Setup

sheet	Coordinate	
	x	y
TS & L	15000000	15000700
TS & L (if req'd.)	15001000	15000700
TS & L (if req'd.)	15002000	15000700
TS & L (if req'd.)	15003000	15000700
GP&E	15000000	15000000
design sheet 2	15001000	15000000
design sheet 3	15002000	15000000
design sheet 4	15003000	15000000
design sheet 5	15000000	14999300
design sheet 6	15001000	14999300
design sheet 7	15002000	14999300
design sheet 8	15003000	14999300
design sheet 9	15000000	14998600
design sheet 10	15001000	14998600
design sheet 11	15002000	14998600
design sheet 12	15003000	14998600

CELL LIBRARIES

The CADD support web page has all cell libraries which are available to consultants. Most of them are collections of base sheets. There are three which do not contain base sheets that should prove to be useful. Those are bcdl993.cel, planning.cel and detailib.cel. (There are also three metric versions which have similar names). Bcdl993.cel contains patterns, a border, North arrow and other miscellaneous cells. Planning.cel contains details and symbols used in the preparation of TS & L's. And finally, detailib.cel contains details, general notes, pay items as well as sheets which are intended to become base sheets. All of the cell libraries have an Adobe pdf file that gives descriptions of their contents.

SYMBOLOLOGY

The old CADD manual contained one sheet which gave the attributes of the elements used in a design file. This has been slightly modified to make use of levels. The level numbers are now set to match the color numbers. This will give the users an additional means of selecting elements and will also simplify setting up SpecChecker for in-house jobs.

We are now using custom line-styles for centerlines, break-lines, match lines, etc. Their resource file is now available on our web site.

Below are tables of the new symbologies.

TS & L Plans				
Description	Level	Color	Style	Weight
Border, main	35	35	varies	varies
Border, print	36	36	0	0
Border, plot	37	37	0	0
concrete hidden	6	6	2	2
concrete object	5	5	0	2
Cut / match line	9	9	custom	2
dimensions	1	1	0	0
existing	4	4	1	0
Miscellaneous	14	14	varies	varies
patterns, break-lines, centerlines, etc.	9	9	custom	0
reinforcement	8	8	0	1
Reinforcement, existing	11	11	2	0
Reinforcement, hidden	10	10	3	1
right of way	7	7	custom	1
steel hidden	3	3	2	1
steel object	2	2	0	1
Table, border	1	0	0	3
Table, lines	9	9	0	0
text	1	1	0	0
title	1	0	0	3

Design Plans				
Description	Level	Color	Style	Weight
Border, main	35	35	varies	varies
Border, print	36	36	0	0
Border, plot	37	37	0	0
concrete hidden	6	6	3	4
concrete object	5	5	0	4
Cut / match line	9	9	custom	2
dimensions	1	1	0	0
existing	4	4	1	1
Miscellaneous	14	14	varies	varies
patterns, break-lines, centerlines, etc.	9	9	custom	0
reinforcement	8	8	0	2
Reinforcement, bending	12	12	0	4
Reinforcement, existing	11	11	2	1
Reinforcement, hidden	10	10	3	2
Soil boring logs	13	13	0	varies
steel hidden	3	3	3	2
steel object	2	2	0	2
Table, border	1	0	0	3
Table, lines	9	9	0	0
text	1	1	0	0
title	1	0	0	3

FONT INFORMATION

Our fonts exist in the resource file fontlib.rsc which is available on our website. The font information for English and Metric files are as follows:

English settings					
	font	height	width	line spacing	underline
General text	30	0.14	0.14	0.10	no
Subscripts	30	0.10	0.10	NA	no
Top of Slab Elevations	31	0.0938	0.0938	0.0625	no
Boring log text	109	0.09	0.09	NA	no
Titles	30	0.20	0.20	0.20	yes*

Metric settings					
	font	height	width	line spacing	underline
General text	30	3.27	3.27	2.33	no
Subscripts	30	2.33	2.33	NA	no
Top of Slab Elevations	31	2.38	2.38	1.45	no
Boring log text	109	2.29	2.29	NA	no
Titles	30	4.67	4.67	4.67	yes*

* Set underline spacing in workspace/preferences/text to 33%.

PLOTTING

The new borders are set up to allow for the use of MicroStation's Batch Print/Plot function. The main border is placed on level 35, the border that we use for 1/4 size prints is placed on level 36 and the border used for full-sized prints is placed on level 37.

Plotters should be set up to generate the following line thicknesses:

weight	thickness (in inches)
0	0.005
1	0.010
2	0.015
3	0.020
4	0.025
5	0.030

DIMENSIONING

We typically use line terminators as opposed to setting up the auto-dimensioning in MicroStation. The cell used for the terminator is C00011 in bcdl993.cel or mbcdl993.cel.

Dimension stack spacing should be 1/2", although 3/8" is acceptable if there are space constraints. Their extension lines should extend 1/16" beyond the dimension.

Dimension lines should not be broken unless they pass through one another. Generally, do not break object lines for dimension lines. There are two instances when object lines should be broken. The first is if text passes through an object line. The second is if an arrowhead passes through an object line to point to another object line, the first object line should be broken to make it clear which object line that it is pointing to.

SETTINGS MANAGER

The English version of the Bridge Office Settings Manager is now available on our web site. The resource files and macros used by the Settings Manager are also available. Bl01e.stg is the English version and bl01m.stg is the metric version.

SHEET SEQUENCE

The sheet sequence generally followed at the Bridge Office is as follows:

General plan and elevation

Footing layout

Stage construction details

Temporary concrete barrier or temporary bridge rail details

Top of slab elevations

Superstructure (plan and cross section)
Superstructure details (expansion joints, deck drains, etc.)
Diaphragm details (for integral and semi-integral abutments)
Expansion joint details
Drainage scuppers
Bridge rail details
Girder and framing details (steel or concrete)
Bearing details
Anchor bolt sheet
Abutments
Piers
Piles
Bar splicer details
Cantilever forming bracket details
Boring logs

BASE SHEETS

Base sheets are many times split out into two or three cells. This is due to limitations within MicroStation J. The next version of MicroStation lifts that limit which will allow base sheets to reside within single cells. For now, to simplify their use, pdf files are included on the web site that describe and list the required cells for any base sheet.

Questions and comments can be e-mailed to bestrm@nt.dot.state.il.us.